REMARKS / ARGUMENTS

Claims 1-16 are pending in this application. Claims 1-16 stand rejected.

With this Amendment, claims 4 and 12 have been amended to correct a minor typographical error.

Entry of this Amendment is appropriate since the amendments (a) place the application in condition for allowance (for the reasons discussed herein); (b) do not raise any new issues requiring further search and/or consideration; (c) do not present any additional claims; and (d) place the application in better form for appeal- should such appeal be necessary. Entry is therefore respectfully requested.

If, however, the Examiner believes that there are any unresolved issues requiring adverse action in any of the claims now pending in the application, it is requested that the Examiner telephone Jeffery J. Brosmer, Ph.D., ESQ. At 732-335-5773 so that arrangements may be made for resolving such issues as expeditiously as possible.

Claims Rejection –35 U.S.C. §102

1. USP #6,650,846

Claims 1, 7-9, 15 and 16 were rejected under the provisions of 35 U.S.C. §102(e) as being anticipated by United States Patent No. 6,650,846, which issued to Ito on Nov.18, 2003 (hereinafter the Ito '846 patent).

In view of the following discussion and assuming, arguendo, that the reference(s) cited with respect to the 35 U.S.C. § 102(e) rejections are in fact prior art, the applicants submit that the rejection(s) are traversed, and the rejected claims are allowable.

Before discussing the prior art in detail however, it is first worth reviewing the applicants' invention of the instant application. In particular, the applicants have developed an optical telecommunications transmission system and accompanying optical transmitter that generates a stream of return-to-zero (RZ) optical pulses in which alternate ones of the pulses have orthogonal polarizations. The phase(s) of these optical pulses are then modulated as a function of input data applied to the transmitter, thereby encoding the input data onto the stream of RZ optical pulses.

Turning our attention now to the Ito '846 patent, it is urged that the patentees there fail to teach or suggest an optical transmitter / optical system wherein the phases of optical pulses are modulated as a function of input data – as is taught and claimed by the applicants of the instant application.

More particularly, the patentees of the Ito '846 patent instead describe an optical transmitter/optical system including a light source, an intensity modulator for modulating the intensity of light output from the light source according to NRZ data, and a subsequent polarization modulator for modulating the polarization of the output from the intensity modulator according to an alternating signal.

Additionally, instead of using the NRZ data to modulate the intensity of the light output from the light source, the Ito '846 patentees teach that an RZ

signal may be used for intensity modulation, and instead of using the alternating signal to modulate the polarization of the intensity modulator output, a signal that inverts a logic for those bits having a value for the larger intensity of the modulated light may be used to modulate the polarization.

Finally, - and or particular importance to the instant application – the Ito '846 patentees teach a phase modulator that uses a bit rate frequency sine wave as a modulation input which may be inserted between the intensity modulator and the polarization modulator. In that case – where the phase modulator uses a bit rate frequency sine wave as modulation input - the intensity and phase modulator(s) may be connected in the reverse order.

Accordingly, and as the applicants of the instant application will more clearly show, the Ito '846 patent does not anticipate the claimed invention of the instant application because there is no teaching in the Ito '846 patent– either implied or otherwise – of modulating the phases of the RZ optical pulses a function of input data as is claimed by the applicants.

With respect to the stated rejections in the current Office Action, the applicants now suggest that the Examiner was mis-led to the mistaken belief that the Ito '846 patent anticipates the claimed invention of the instant application because the FIG. 14 of the Ito '846 patent - upon which the Examiner solely relied – was in error !

More specifically, the error in FIG. 14 led the Examiner to the mistaken conclusion that the patentees there modulated the phases of RZ optical pulses as a function of input data (Office Action, Page 1, Section 2, last line) when, in fact, there is no such teaching or suggestion in that '846 patent.

This thesis - that the FIG. 14 of the Ito '846 is in error - is further developed with a careful, comprehensive review of that patent. More particularly, we begin with a review of the Abstract of the Ito '846 patent, where it recites in applicable part:

> "...A **phase modulator using a bit rate frequency sine wave as a modulation input** may be inserted between the intensity modulator and the polarization modulator ..." [Abstract, Page 1, Lines 11-14, emphasis supplied]

In fact, throughout the Ito '846 patent, continuous reference is made to a phase modulator using a bit rate frequency sine wave as modulation input.

Providing additional weight to this thesis is the observation that consistently throughout the written specification and the multiple figures comprising the drawings, the "phase modulator" block is always referenced by reference numeral 3. In this erroneous FIG 14, the phase modulator block is only there indicated by reference numeral 2 !

Still further with regard to the errors contained within this FIG 14, it is noted also that the "NRZ DATA" is only there referenced by reference numeral 105, and the "BIT RATE FREQUENCY SINE WAVE" is only there referenced by reference numeral 101. Throughout the entire written specification and in every other figure comprising the drawings, the NRZ DATA is consistently referenced by reference numeral 101 and the BIT RATE FREQUENCY SINE WAVE is consistently referred to by reference numeral 105. Only in this erroneous FIG 14 do the patentees mistakenly mis-label these two elements 105 and 101, respectively.

Finally, if there remains any doubt that the FIG 14 of the Ito '846 patent is mis-labeled, a simultaneous reference to FIG 15 – which is provided on the same sheet of the Ito '846 patent – clearly shows the correct labeling of NRZ DATA by reference numeral 101 and BIT RATE FREQUENCY SINE WAVE by reference numeral 105.

Accordingly, since this FIG 14 – upon which the Examiner mistakenly relies – is inconsistent with and contrary to the remainder of that Ito '846 patent and therefore in error, the Ito '846 patent provides no such teaching or suggestion of modulating the phases of the RZ optical pulses a function of input data as is taught and claimed by the applicants of the instant application.

In that regard, independent claim 1 recites:

> 1. A transmitter for use in optical communication system, said transmitter comprising
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> a means for generating a stream of RZ optical pulses in which alternate ones of such pulses have essentially orthogonal polarizations, and
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> a means for **modulating the phases of said optical pulses as a function of input data applied to said transmitter to encode said input data onto said stream of RZ optical pulses**." [emphasis supplied]

Independent claims 4, 7, 9, 12, and 15 each recite similar limitations.

Consequently, the applicants submit that independent claims 1, 4, 9, 12, and 15 are not anticipated by the Ito '846 patent, as it fails to teach or

suggest all of the limitations recited therein. Inasmuch as dependent claims 2-3, 5-6, 8, 10-11, 13-14 and 16 each recites further distinguishing aspects of the invention of the instant application, the applicants submit that they are not anticipated by this reference also.

USP #6,819,872

Claims 4, 6, 12, and 14 were rejected under the provisions of 35 U.S.C. § 102(e) as being anticipated by United States Patent No. 6,819,872 which issued to Farries et al, on Nov. 16, 2004 (hereinafter the Farries '872 patent).

In rejecting claims 4, and 12 in the Office Action, the Examiner provided a brief outline of his position that the Farries '872 patent anticipated all of the claimed elements of the instant application, and - with respect to claims 6 and 14 – used this references soliton teachings to reject these claims 6 and 14 as well.

While the Examiner is certainly correct that the Farries '872 patent does disclose certain aspects of a transmission system and solitons, it does not anticipate the claimed invention of the instant application.

More particularly, the Farries '872 discloses a time division multiplex circuit for receiving two strams of data and for polarization time-division multiplexing the two streams of data onto a single waveguide such that one of the streams of data is delayed by a certain time from the other data stream. More specifically, two streams of differently (preferably orthogonally) polarized solitons are interleaved (time-division multiplexed) at a transmitter, and later separated at a receiver to recover both data streams.

And while these two streams of orthogonally polarized solitons shown to be subsequently modulated by the application of data, there is simply no teaching – either implied or otherwise, of modulating the phases of RZ optical pulses a function of input data as is only now taught and claimed by the applicants of the instant application.

Recalling at this point independent claim 4, which recites in applicable part:

> "4. A transmitter for use in optical communication system, said transmitter comprising
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> a means for generating a first and a second stream of RZ optical pulses in which pulses ~~is~~ in said first stream have essentially orthogonal polarizations with respect to pulses in said second stream, and
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> **means for modulating the phase of said optical pulses in said first and second streams as a function of first and second streams of input data applied to said transmitter, respectively to encode said first and second streams of RZ optical pulses, respectively.**" [emphasis supplied]

As the Examiner can surely appreciate, since the Farries '872 patent fails to teach or suggest all of the limitations of the claimed invention, it cannot anticipate that invention. Since similar limitations are found in independent claim 12, it cannot anticipate that claim as well.

Accordingly, the applicants submit that independent claims 4, and 12 are not anticipated by the Farries '872 patent and are allowable under the

provisions of 35 U.S.C. § 102(e). Dependent claims 6, and 14, which further limit these independent claims, are believed allowable as well.

Consequently the applicants believe that all of the claims presently in the application are allowable with respect to the provisions of 35 U.S.C. § 102(e) and respectfully request the Examiner to withdraw these rejections.

Claim Rejections- 35 U.S.C. §103

Claims 2,3,10, and 11 were rejected under the provisions of 35 U.S.C § 103(a) as being unpatentable over the Ito '846 patent in view United States Patent No. 6,522,439 issued to Price, et.al (hereinafter the Price '439 patent).

The applicants have previously shown that the Ito '846 patent fails to teach or suggest all of the limitations of the claimed invention of the instant application. The only remaining issue then is whether the Price '439 patent, taken in combination with the Ito '846 patent, overcomes this teaching deficiency. As the applicants will show, the answer is no.

Turning now to that Price '439 patent, it is observed that the patentees there teach the simultaneous upconverting of electrical signals carrying information at electric frequencies onto optical subcarrier lightwave frequencies that are different from the carrier frequency of the lightwave onto which the electrical frequencies are upconverted.

In applying this combination of references, the Examiner relies on the Price '439 patent to provide teachings related to particular modulation format(s), such as Phase Shift Keying (PSK), and Differential Phase Shift

Keying (DPSK) recited in dependent claims 2, 10 and 3, 11, respectively, while continuing to maintain his reliance on the Ito '846 patent to teach all of the limitations of independent claim 1.

As was already shown, the 'Ito '846 patent fails to teach or suggest all of the limitations of the claimed invention of the instant application recited in the independent claims, and in particular fails to teach or suggest modulating the phases of RZ optical pulses a function of input data.

The Price '439 patent fails to teach these important limitations as well. Since the cited Ito '846 and Price '439 patents fail to teach all of the limitations of the claimed invention – either alone or in the combination suggested – they cannot negate its patentability.

Finally, the Examiner rejected claims 5 and 13 under the provisions of 35 U.S.C. § as being unpatentable over Farries.

Regarding these claims 5 and 13, the Examiner applies this Farries '872 patent to limitations recited in these dependent claims 5 and 13.

Once again, and as noted before with respect to claim 12 of the instant application which recites in applicable part:

> "12. A method for transmitting input data using an optical communication system, said method comprising the steps of
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> generating first and second streams of RZ optical pulses in which pulses in said first stream have essentially orthogonal polarizations with respect to pulses in said second stream, and

modulating the phase of said optical pulses in said first and second streams as a function of first and second streams of input data, respectively, to encode said first and second streams of input data onto first and second streams of RZ optical pulses, respectively." [emphasis supplied]

Since the references fail to teach or suggest – either alone or in any combination – all of the limitations of the independent claims such as claim 12 above, they do not render the claimed invention of the instant application obvious from their view. Consequently, each of the independent claims, are patentable under the provisions of 35 U.S.C. § 103.

Inasmuch as the dependent claims each recites further distinguishing aspects of the invention, they are patentable as well.

Accordingly, the applicants submit that all of the claims, now present in the application are allowable under the provisions of 35 U.S.C. § 103 and respectfully request the Examiner to withdraw these rejections.

Conclusion:

The applicants submit that all of the claims in their present form are allowable. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

Respectfully submitted,
JEFFERY J. BROSEMER

By _____
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CERTIFICATE OF TRANSMISSION UNDER 37 C.F.R. 1.8(a)

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office on September 28, 2005.

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Signature

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